6. On Mammals from Ecuador. By Oldfield Thomas, F.Z.S., Assistant in the Zoological Department, British Museum.

[Received April 19, 1880.]

(Plate XXXVIII.)

The collection to which this paper chiefly refers was brought from Ecuador by Mr. Clarence Buckley, together with a large number of birds and other animals obtained by him during his four years' residence in that country. It consists of 141 specimens, belonging to 38 species. The specimens are all in an excellent state of preservation; and a nearly complete set has been selected for the British Museum. I have also included in my notes a small collection from the same region received by the British Museum from Mr. Illingworth, containing 12 specimens belonging to 10 species—the total number of species being thus increased to 41.

The collection only contains one undoubted new species, *Bassaricyon alleni*, an animal especially interesting both by its being the only known specimen of the genus which shows the external characters, and also by the remarkable instance of mimicry which it exhibits. Two of the Squirrels are also interesting as forming the long-expected links between *S. æstuans*, L., and *S. griseogenys*, Gray.

On the whole this collection confirms the correctness of the views expressed by Messrs. Newton and Salvin on the division of the Neotropical Region into subregions, as published in the new edition of the 'Encyclopædia Britannica.'[1] In their opinion the eastern part of Ecuador belongs to the Amazonian subregion; and we therefore find in this collection a very great preponderance of Amazonian forms, with a few species belonging to other subregions, such as *Mycetes niger*, which is a South-Brazilian type, *Tapirus roulini*, a Sub-Andean, and *Cariacus rufinus*, the range of which, according to Sir Victor Brooke[2], extends from Guatemala to Ecuador.

The only papers hitherto published on the Mammals of Ecuador, so far as I am aware, are those by Mr. Tomes[3], referring to the specimens obtained by Mr. Fraser at Gualaquiza and Palatanga. These papers, however, deal almost entirely with the Chiroptera and Rodentia, in which orders Mr. Buckley's collection is especially deficient, so that I am unable to draw any comparisons between the two.

The localities and dates at which the collections were made were as follows:—

Sarayacu[4], on the Bobonasa river, Upper Pastasa river.

Copataza river, about 50 miles S.E. of Sarayacu, a tributary of the Pastasa. The specimens from this locality were obtained between December 1877 and February 1878.

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[1] Vol. iii. p. 744.

[2] P. Z. S. 1878, p. 925.

[3] P. Z. S. 1858, p. 546; 1860, pp. 211 & 260.

[4] This must not be confounded with the far larger and better known Sarayacu on the Ucayali in Peru.

Andoas, on the Pastasa river, 70 miles below Sarayacu. September 1878.
Intac, 50 miles N. of Quito. July 1877.
Pallatanga, 50 miles S.W. of Riobamba.
Balzar, on the Palenque river, 70 miles north of Guayaquil.

The specimens from Balzar were collected by Mr. Illingworth, all the remainder by Mr. Buckley.

1. Mycetes seniculus, Linn.

Seven specimens from the Copataza river.

2. Mycetes niger, Geoffr.

M. niger (mas) and *M. stramineus* (fem.), Geoffr. Ann. Mus. xix. p. 108.

Simia caraya, Humboldt, Recueil, p. 255, no. 11.

One specimen from Intac.

This Intac specimen, of which, unfortunately, the sex cannot be determined, agrees exactly with Humboldt's original description of the female of his *Simia caraya*, which he describes as having a black head and back, while the sides and belly are yellow. In all recent descriptions, however, the male is described as being nearly uniformly black, and the female uniformly yellow; but this appears to be just such an intermediate specimen as Humboldt has described. On the other hand Prof. Schlegel[1] mentions that adult males sometimes have the black on the hands and feet mixed with yellow; so that, if our specimen is a male, it may represent merely an extreme phase of this variation.

Mycetes palliatus, to which this specimen bears a certain resemblance, is only found in Central America[2], and differs in the length of the hair and in the detailed distribution of the colours.

3. Lagothrix infumata, Spix.

Five specimens, Copataza river.

4. Nyctipithecus trivirgatus, Humb.

Five specimens, Copataza river.

5. Pithecia monachus, Humb.

Nine specimens, Copataza river.

6. Callithrix cuprea, Spix.

Twelve specimens from the Copataza river, and one from Andoas.

The Andoas specimen, which is a male, differs from the rest in having the fur on the back of a dirty orange-grey colour, without annulations, instead of being of a bright annulated black and white. One of the others, a female, shows a tendency to this condition of the hair, which is therefore very probably a seasonal change, as the Andoas specimen was shot in September, while the others were obtained between December and February.

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[1] Monogr. Singes, p. 149.

[2] *Cf.* Alston, Biol. Cent. Am., Mamm. p. 4.

7. CHRYSOTHRIX SCIUREA, Linn.

Seven specimens, Copataza river.

Of the four adult specimens of this species, two are males and two females. The males are of the normal coloration; but the females both have a distinct black line along the side of the crown, above each ear, and extending in front down the side of the face nearly to a level with the angle of the mouth; and in one of them the two lines are connected across the neck by a third.

This agrees very well with the description of *C. lunulata*, Geoffr.[1] (*C. nigrivittata*, Wagn.[2]), a species founded entirely on specimens with similar black lines. Dr. Gemminger, of the Munich Academy, has most kindly examined for me the types of Wagner's *C. nigrivittata*; and he tells me that the series consists of two males and a female; so that these lines are not attributable to sexual difference, as I at first suspected. Dr. Gemminger at the same time states his opinion that *C. sciurea*, *C. nigrivittata*, and *C. entomophaga* form but one variable species. I am informed by Mr. Buckley that all his specimens were collected at the same place, and that the Indians consider them to be of the same species, and think the black lines to be merely a sign of old age.

Without further material I do not venture to give a decided opinion as to the validity of *C. lunulata* as a species; but it certainly is suspicious that the localities from which it has been recorded are not close together, but are scattered over the wide range of *C. sciurea*.

8. MIDAS ILLIGERI, Puch.

Twenty-one specimens, Copataza river.

All these specimens agree in having the fur across the shoulders and loins of a rich reddish chestnut-colour, thus differing from the next species, which has the hair on the same parts annulated with black and yellow.

9. MIDAS NIGRIFRONS, Geoffr.

Six specimens, Copataza river.

10. HAPALE PYGMÆA, Spix.

Six specimens, Copataza river.

11. THYROPTERA TRICOLOR, Spix.

One specimen, Sarayacu.

12. MOLOSSUS ABRASUS, Temm.

One specimen, Sarayacu.

13. PHYLLOSTOMA HASTATUM, Pall.

Two specimens, Sarayacu.

14. CAROLLIA BREVICAUDA, Wied.

Three specimens, Sarayacu.

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[1] Archiv. Mus. iv. p. 18, 1844.

[2] Abh. Münch. Akad. v. p. 461.

15. ARTIBEUS (URODERMA) BILOBATUS, Peters.

One specimen, Sarayacu.

There can be little doubt as to the correctness of this determination, although the specimen has been dried, and therefore does not show the characters of the nose-leaf very well; but the dimensions agree nearly exactly with those given by Dr. Peters[1], and there are three molars in each jaw, as in the subgenus *Uroderma*. The jaws are rather more elongated than is usual in *Artibeus*, and in this respect resemble those of *Vampyrops*; but the form and direction of the upper incisors prove that it is undoubtedly an *Artibeus*.

16. FELIS PARDALIS, Linn.

Two immature specimens, Sarayacu.

17. FELIS TIGRINA, Erxl.

Two specimens, adult and young, Andoas.

These Tigercats belong to the variety which has been till lately known as *F. macroura*, Wied.; but Mr. Elliot[2] and Mr. Alston[3] have now decided that it is not specifically separable from the earlier-known *F. tigrina*.

[MUSTELA PUTORIUS, Linn.

One specimen, Pallatanga.

This is of course merely a Polecat which has been used for ferretting, and has made its escape from captivity.]

18. GALICTIS BARBARA, Linn.

Two specimens, Sarayacu.

19. PTERONURA SANDBACHII, Gray.

One specimen, Sarayacu.

This Otter's skin exactly agrees with Gray's type of the species, a half-grown specimen from Demerara. It is a very remarkable thing that this species should be found in Ecuador, 1500 miles from its only hitherto known habitat, on an entirely different river-system; but I can find no characters by which to separate the Ecuador form. The specimen is a flat skin, without skull; but it shows clearly the three external points by which *Pt. sandbachii* differs from all other Otters, viz. the corded margins to the tail, the extension of the hair on the nose-pad to the absolute edge of the nostrils, and the yellowish-white irregular blotches on the throat. Prof. Reinhardt[4] has stated his opinion that this species, or one closely allied to it, inhabits the province of Minas Geraes, South-east Brazil. If this be the case, it would show that this Otter is very widely distributed over Tropical South America, instead of being restricted to Guiana as was formerly believed.

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[1] MB. Ak. Berl. 1865, p. 587.

[2] P. Z. S. 1877, p. 704.

[3] Biol. Centr. Am., Mamm. p. 61.

[4] P. Z. S. 1869, p. 57.

20. NASUA RUFA, Desm.

Two specimens from the Copataza river, and one from Balzar.

21. BASSARICYON ALLENI, n. sp. (Plate XXXVIII.)

One adult female from Sarayacu.

This is by far the most interesting animal contained in the collection, as the genus has been hitherto known from a single skull only, collected by Prof. Gabb in Costa Rica, and now in the collection of the Smithsonian Institution, the skin of which has been accidentally mislaid[1]. This skull Mr. J. A. Allen, in the 'Proceedings of the Philadelphia Academy' for 1876, described under the name of *Bassaricyon gabbi*, and figured it most carefully; so that, on comparing the skull of our specimen with his figures, I was at once able to see that it was undoubtedly congeneric; there were, however, so many differences in detail as, combined with the difference in locality, to necessitate its separation as a distinct species. This I take the liberty of naming after the founder of the genus, to whom every student of the Mammalia owes a heavy debt of gratitude for the work he has done among the North-American representatives of that class.

In its external characters our specimen presents a most extraordinary resemblance to the common Kinkajou (*Cercoleptes caudivolvulus*); in fact, if the skull had not been taken out of the skin here, so that no doubt could exist as to their belonging to one another, no one could have believed that it was any thing but a rather small specimen of that animal.

The body and tail are orange-grey, the hairs of the back being tipped with black; the belly is of the same colour, but lighter. The face and crown are covered with short whitish hairs tipped with black, the black tips being longer towards the occiput. The resulting clear grey of the face is the only distinction in colour from the Kinkajou, that animal having the face coloured like the body. The tail is long, covered with long woolly hairs, many of which show a distinct golden lustre. From the appearance of the fur it seems probable that the tail is not prehensile (as it is in the Kinkajou). The fur all over the body, like that on the tail, is rather longer and more woolly than that of the Kinkajou. The mammæ are two in number, situated about 2½ inches from the anus.

The skull is nearly exactly the same size as that of *B. gabbi*, and has the same general proportions; but the following differences are observable:—(1) The upper outline of the skull in *B. gabbi* is regularly convex, but in *B. alleni* the frontal region is flattened from the crown to the nasals; thus the perpendicular height of the skull from the front edge of the alveolus of the last molar to the frontal profile (fig. 2, *a* to *b*) in *B. gabbi* measures 1 inch, in *B. alleni* only 0·9 in. (2) In the side view of the skull in *B. gabbi* the frontal profile shows distinctly above the supraorbital process and ridge, while in *B. alleni* the latter appear to be quite at the top of the skull. (3) In the same view the upper edge of the middle of the zygoma is nearly horizontal in *B. gabbi*, while it is evenly convex in *B. alleni*. (4) Seen from above, the zygomata are nearly parallel in *B. gabbi*, but

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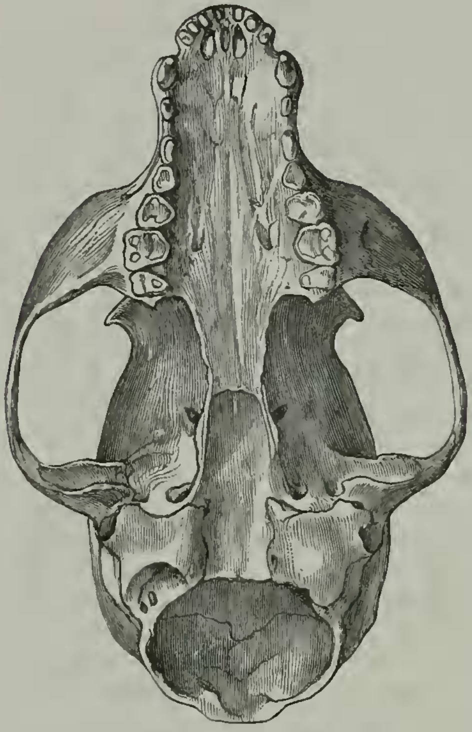
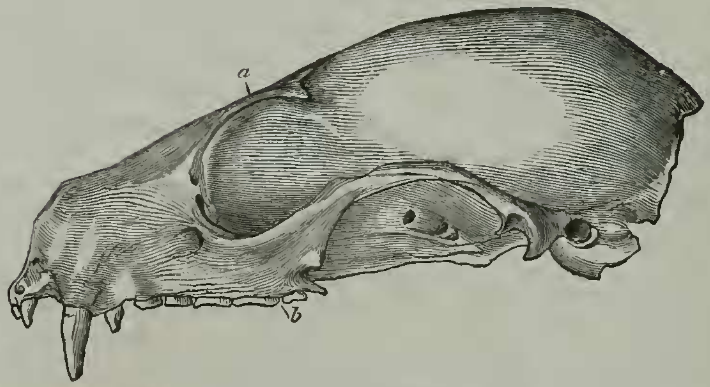
[1] By an unfortunate mistake Mr. Allen was led to figure in the Proc. Phil. Acad. for 1877 the skin of the Central-American Coati (*Nasua nasica*) as that of his *Bassaricyon gabbi*; but he has since explained the error.

Fig. 1.



Skull of *Bassaricyon alleni*.

Fig. 2.



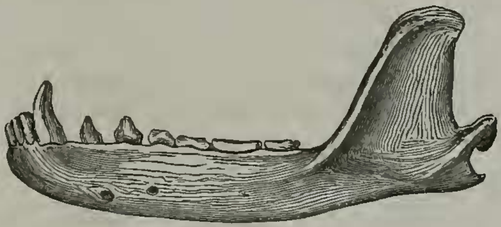
Upper jaw of *Bassaricyon alleni*.

they slightly diverge behind in *B. alleni.* (5) The last upper molar, instead of being subquadrate, as long as it is broad, and nearly as large as the first, is subtriangular as in *Procyon*, much broader than long, and considerably smaller than the first molar, as shown in the table of measurements. (6) The top of the coronoid process of the lower jaw (see fig. 3) is different in shape from that of *B. gabbi*; and in the latter the angular process is further from the condyle than in *B. alleni*.

When the external characters of *B. gabbi* are described, I feel quite sure that further points of difference will be found between these two forms from such very distant localities as Costa Rica and Ecuador.

The skull of *Bassaricyon* is so absolutely different from that of *Cercoleptes* that Mr. Allen did not think of comparing the two; and I fully agree with him in thinking this animal more nearly allied to *Procyon* and *Nasua* than to any of the other Procyonidæ, though in size it is more similar to *Bassaris*.

Fig. 3.



Lower jaw of *Bassaricyon alleni*.

The external resemblance of this species to *Cercoleptes* certainly seems to be an instance of mimicry, which, so common among insects, is somewhat rare among Mammalia. It is, however, very difficult to understand how being mistaken for *Cercoleptes* could in any way benefit *Bassaricyon*; but when more of the habits of the latter are known we may hope to be able to guess at the true use of the likeness.

Mr. Buckley unfortunately did not take any especial notice of the habits of this animal, as both he and the Indians thought it to be merely the common Kinkajou. It is much to be hoped that more specimens of this interesting genus will be found; and I would draw the attention of collectors and others to the only external means of distinguishing it—namely, the flatness of the head and the greyness of the face as compared with the high head and yellowish face of the Kinkajou.

Measurements in inches and tenths:—

		in.
Length, head and body		16·0
Length of tail		19·0
Tip of nose to eye		1·4
,, ,, ear		2·6
Length of skull, from occiput to end of præmaxillæ		3·17
Greatest breadth		2·0
Distance between orbits		·65
Width at orbital processes		1·10
Front of præmaxillæ to tip of orbital processes		1·64
Length of upper molar series		·90
Length of lower jaw		2·10
Size of upper molars:—	Length.	Breadth.
First	0·17	0·19
Second	0·21	0·20
Third	0·12	0·18

22. CERCOLEPTES CAUDIVOLVULUS, Pall.

One specimen from Sarayacu of the ordinary character, and two from Balzar with remarkably short tails, the tails being about 11 inches long only, while the head and body in both measure about 16 inches. The skulls of these specimens are quite of the normal type; so that the shortness of their tails must be merely owing to individual variation.

23. TAPIRUS ROULINI, Fisch.

T. ecuadorensis, Gray.

Two young specimens, Sarayacu.

Mr. Buckley had obtained a fine series of about fifteen or sixteen adult specimens of this Tapir; but, unfortunately, before the skins were prepared, a troop of native revolutionary soldiers put in an appearance and cut off the hoofs of every specimen to make into amulets, so that the whole series of skins was perfectly useless for scientific purposes. Mr. Buckley was so vexed at this misfortune that he did not even care to prepare the skulls, which would have formed a very interesting set.

24. CARIACUS (COASSUS) RUFINUS, Puch.

Four specimens, three adults and one young, Sarayacu.

25. CARIACUS (COASSUS) NEMORIVAGUS, F. Cuv.

Four specimens, two adult and two young, Sarayacu.

26. SCIURUS STRAMINEUS, Eyd. & Soul.

One male specimen, Balzar.

27. SCIURUS ÆSTUANS, Linn.

Two specimens from Intac, and one from Balzar.

Under the heading of *S. griseogenys*, Gr., Mr. Alston, in his late review of the Neotropical Squirrels[1], says, in reference to the distinctness of that species from *S. æstuans,* "That connecting links may yet be found seems very probable; but I have not been able to find such in the very large series I have examined, and am consequently compelled to keep them provisionally distinct." Now these two Intac specimens seem to me to be just such intermediate specimens as Mr. Alston refers to. *S. griseogenys* is separated from *S. æstuans* by having its belly and the tips of the tail-hairs of a rich orange or rufous, while the same parts in *S. æstuans* are white or pale yellow, and also by its larger size. One of the Intac specimens is very like typical *S. æstuans,* having the belly white and the tail-hairs tipped with yellow; but it is considerably larger than the average size of that species, and on the sides of the chest and the middle of the tail there is a tendency to a reddish coloration. The specimens collected by Mr. Fraser at Gualaquiza and referred to by Mr. Tomes[2], seem to have been somewhat of this character; those from Pallatanga, on the other hand, were typical *S. griseogenys*[3]. The other specimen is far more like this latter species, as all along the sides of the belly the fur is a rich orange-rufous, and the tips of the tail-hairs are of the same colour; so that this specimen only differs from *S. griseogenys* by having the throat and centre of the belly white, as in *S. æstuans.* The Balzar specimen is a typical *S. griseogenys.*

It was quite to be expected that the links between these two species would be found in Ecuador, as *S. æstuans* ranges over Bolivia, Eastern Peru, Brazil, and Guiana, while *S. griseogenys* is found in Colombia, Venezuela, and Central America.

S. griseogenys may still be considered a very well marked variety, and should stand as *S. æstuans,* var. *hoffmanni,* Dr. Peters having described it under this varietal name in 1863[4], while Dr. Gray's *S. griseogenys* dates only from 1867[5].

28. CŒLOGENYS PACA, Linn.

A single skull, Sarayacu.

29. HOLOCHILUS, sp.

An albino Rat from the Balzar Mountains is referable to this genus; but its size and proportions do not agree with those of any of the hitherto described species of *Holochilus.* Without seeing normally coloured individuals, however, I do not feel justified in describing it as new, as there are numerous species of South-American so-called *Mus* and *Hesperomys* which have been described merely on external characters, without reference to the skull, by which alone the correct genus of a murine animal can be determined.

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[1] P. Z. S. 1878, p. 667.

[2] P. Z. S. 1858, p. 547.

[3] P. Z. S. 1860, p. 213.

[4] Monatsb. Ak. Berl. 1863, p. 654. Mr. J. A. Allen, provisionally accepting the distinction of the form in his paper (Bull. U.S. Geol. & Geogr. Surv. iv. p. 885), called it *Sciurus hoffmanni,* Ptrs

[5] Ann. & Mag. N. H. ser. 3, xx. p. 419.

30. CHOLŒPUS HOFFMANNI, Peters.

A young skin and skeleton from Balzar, showing clearly the presence of only six cervical vertebræ, and six specimens from Sarayacu. There is also a skin from the latter place which appears to be referable to *C. didactylus*, Linn.; but, without seeing the skeleton, I hesitate to state for certain that the two species are found together in the same locality. One of the Sarayacu skulls shows scarcely a trace of the usual inflation of the pterygoids; the absence of this inflation in certain species of the Three-toed Sloths caused Dr. Gray to separate the genus *Arctopithecus* from *Bradypus*[1]; but this instance of its absence among the Two-toed Sloths shows that it is not a character which can be relied upon for generic distinction.

31. BRADYPUS INFUSCATUS, Wagl.

A series of seven specimens from Sarayacu, and one from Balzar. The specimens show well the extraordinary amount of variation that occurs among the Sloths, there being no two skulls or skins exactly alike. The Balzar specimen has the soft straight hair on the face extending on the head to a distance of 2½ inches from the tip of the nose; no other specimen that I have seen has this hair extending more than to just above the eyes, a distance of about one inch. There is, however, nothing special about the skull of this specimen.

32. PRIODONTES MAXIMUS.

Dasypus maximus, Kerr, Linn. Syst. Nat. p. 112, 1792[2].

Dasypus giganteus, Et. Geoff. & Cuv., Cat. Mamm. Mus. d'Hist. Nat. p. 207, 1802.

Dasypus gigas, Cuv. Règne Anim. i. p. 221, 1817.

Two specimens from Sarayacu.

33. TATUSIA KAPPLERI, Krauss.

Two specimens, Sarayacu.

This species, like *Pteronura sandbachii*, was hitherto only known from the Surinam region. These two specimens, however, agree exactly with those which the British Museum received some years ago from Dr. Krauss himself, except that one of them has a fifth claw on the fore as well as on the hind feet. The genus *Tatusia* has normally the rudimentary bones of a fifth toe on the fore feet; so that the occasional development of a fifth claw was quite to be expected.

34. TATUSIA NOVEMCINCTA, Linn.

Tatusia peba, Desm.

One specimen from Sarayacu.

35. XENURUS LUGUBRIS, Gray.

One specimen from Sarayacu.

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[1] P. Z. S. 1849, p. 69.

[2] *Cf.* Ann. & Mag. N. H. ser. 5, iv. p. 396, 1879.

36. **Myrmecophaga jubata**, Linn.

One specimen from Sarayacu.

37. **Tamandua longicaudata**, Wagn.

One specimen, Sarayacu.

38. **Cyclothurus didactylus**, Linn.

Four specimens from Sarayacu, and one from Balzar.

39. **Didelphys derbiana.**

Didelphys derbiana, Waterh. Naturalist's Libr. xi. p. 97, pl. 2.
Didelphys ornata, Tschudi, Fauna Peruana, p. 146, pl. 7.

A male from Sarayacu, and a male and female from Balzar.

The Balzar specimens are of a very pale reddish colour, while the Sarayacu one is of a dark reddish grey; but the Museum series shows every stage between the two.

40. **Didelphys cinerea**, Temm.

A male and female from Sarayacu.

41. **Didelphys murina**, Linn.

One specimen from Balzar.

7. On a Collection of Lepidoptera from Candahar. By Arthur G. Butler, F.L.S., F.Z.S., Assistant Keeper Zoological Department, British Museum.

[Received April 20, 1880.]

(Plate XXXIX.)

The very interesting little series of Lepidoptera which forms the subject of the present paper was collected by Major Howland Roberts at Rokeran, a small village only about six miles from Candahar, on the river Urgundab (or "Argandab"). Major Roberts writes (date 9th January, 1880):— "I made no observation after the 2nd July, further than that I saw two species of *Macroglossa*, viz. *stellatarum* or one nearly allied, and one considerably larger.

"After the beginning of April no rain fell; and when I arrived at Rokeran about the end of April the country was dried up, except where irrigation came into play and a few moist spots in the barren hills. The only plants that were green in these hills during the summer months were chiefly milky plants such as *Euphorbia*, and a few other stunted ones, but no trees; consequently insects were comparatively rare.

"Along the dry bank of the river were little nullahs running into the river; these were kept moist from a small canal running above